

**REMARKS**

The following remarks are fully and completely responsive to the Office Action dated May 20, 2004.

Claims 1-8 are pending in this application. In the outstanding Office Action claims 1 and 8 were rejected under 35 U.S.C. § 102(b), and claims 2-7 were rejected under 35 U.S.C. § 103(a). Claims 1-8 are presented for reconsideration.

Entry of this Amendment is proper under 37 C.F.R. § 1.111 since this Amendment: (a) places the application in condition for allowance for reasons discussed herein; (b) does not raise any new issue regarding further search and/or consideration since the Amendment amplifies issues previously discussed throughout prosecution; (c) does not present any additional claims without canceling a corresponding number of finally-rejected claims and (d) places the application in better form for appeal, should an appeal be necessary. Entry of the Amendment is thus respectfully requested.

**35 U.S.C. § 102(b)**

Claims 1 and 8 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,937,759 to Vold. In making this rejection, the Office Action asserts that Vold teaches each and every element of the claimed invention. Applicant respectfully requests reconsideration of this rejection.

Vold does not teach or suggest a method of designing an arm structure for a robot, as recited in the present claims. Applicant points out that the present invention designs the arm so that linear approximation may be used to locate the tip of the robot arm. The linear approximation method is used to simplify the complex calculation of an

arcuate trajectory, such as the trajectory of a robot arm. Specifically, linear approximation calculates the trajectory of an arc by approximating the arc as a linear function. One example of a linear function is a straight line. The resulting calculation is an approximation or estimation, as opposed to a precise value, of the arc put in terms of a linear function.

In contrast, Vold teaches calculating the precise or exact location and trajectory of the tip of the arm at 33 millisecond intervals using non-linear equations. See Vold, column 25, lines 12-30 and column 20 lines 42-47. The non-linear equations in Vold are based on 3 x 3 matrices. The mathematical functions based on the linear approximation in the present invention are not equivalent to the mathematical functions to constantly calculate the exact location of the arm in Vold, because the present invention approximates the tip position using a linear approximation. See Vold columns 29-31.

Vold also does not teach or suggest “selecting a vertical region in front of the robot to be accessed by the arm in a fully extended state, the location of the selected vertical region being determined with respect to a reference plane; and selecting a length of the arm and a height of the axis of rotation of the arm so that a range of rotational motion in accessing the selected region is covered by a range in which the fore-and-aft distance to the tip of the arm is linearly approximated.”

The Office Action does not point to any particular part in Vold teaching that a vertical region was chosen with respect to a reference plane, or that an arm length or height of the axis of rotation was chosen so that a range of rotational motion in accessing the selected region is covered by a range in which the fore-and-aft distance

to the tip of the arm is linearly approximated. Applicant has carefully reviewed the disclosure and can find no teaching of these claim elements.

Furthermore, the arm of Vold is designed to calculate the precise location. Thus, any vertical region along with the height and length of the arm are not chosen "so that a range of rotational motion in accessing the selected region is covered by a range in which the fore-and-aft distance to the tip of the arm is linearly approximated."

Vold fails to teach each and every limitation of claims 1 and 8. Specifically, Vold fails to teach and/or suggests "selecting a vertical region in front of the robot to be accessed by the arm in a fully extended state." Vold also fails to teach and/or suggest "selecting a length of the arm and a height of the axis of rotation of the arm so that a range of rotational motion in accessing the selected region is covered by a range in which the fore-and-aft distance to the tip of the arm is linearly approximated." Accordingly, Applicant requests reconsideration and withdrawal of the rejection of claims 1 and 8 under 35 U.S.C. § 102(b).

**35 U.S.C. § 103(a)**

Claims 2-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,937,759 to Vold in view of In re Boesch. The Office Action admits that Vold fails to teach the measurements involved in the height of the axis of rotation, swing values, and error toleration. In making this rejection, the Office Action asserts that based on the teachings of Vold, it would have been obvious to one of ordinary skill in the art to discover the optimum value of such result effective variables.

However, as discussed above, Vold fails to teach and/or suggest "selecting a vertical region in front of the robot to be accessed by the arm in a fully extended state." Vold also fails to teach and/or suggest "selecting a length of the arm and a height of the axis of rotation of the arm so that a range of rotational motion in accessing the selected region is covered by a range in which the fore-and-aft distance to the tip of the arm is linearly approximated." Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 2-7 under 35 U.S.C. § 103(a).

### **Conclusion**

Applicant's amendments and remarks have overcome the rejections set forth in the Office Action dated May 20, 2004. Specifically, Applicant's remarks have distinguished claims 1 and 8 from Vold and thus overcome the rejections of claims 1-8 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a). Therefore, Applicant respectfully requests consideration and allowance of claims 1-8.

Applicant submits that the application is now in condition for allowance. If the Examiner believes that the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney by telephone if it is believed that such contact will expedite the prosecution of the application.

In the event that this paper is not considered to be timely filed, Applicants hereby petition for an appropriate extension of time. The Commissioner is authorized to charge payment for any additional fees which may be required with respect to this paper to our Deposit Account No. 01-2300, making reference to attorney docket number 101213-00019.

Respectfully submitted,



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